

CASE 4.—Mrs. N. E., aged 34, housewife. Symptoms: Constant pain, worse after defecation. Multiple peri-rectal abscesses for the past 3 years. Constant rectal discharge and occasional bleeding.

Examination: Connective tissue piles externally. No protrusion. Bilateral fistula-in-ano. Probe inserted to the depth of about one inch, but no internal opening was found. Multiple internal hemorrhoids visible through the speculum.

Diagnosis: Fistula-in-ano, internal, non-protruding hemorrhoids.

Treatment: Under general anesthesia, division of the sphincter and dissection of the fistulous tracts. This was followed in one month by four negative galvanic applications.

Result: Cure.

CASE 5.—Mr. R. J., aged 72, watchman. Symptoms: Protrusion with slight bleeding. Condition present for past 12 years, but bleeding has become less severe during past three years.

Examination: Large internal protruding hemorrhoids continuous with external varicose hemorrhoids.

Diagnosis: Mixed hemorrhoids, severe.

Treatment: Seven negative galvanic applications at four-day intervals.

Result: Protrusion of mucous portion disappeared after second treatment. External varicose portion markedly contracted after the fifth and disappeared after the seventh treatment. No bleeding after the second treatment.

Conclusions *

1. Treatment of hemorrhoids by negative galvanism offers a large field for qualified general practitioners. Ninety per cent of all hemorrhoids are amenable to such treatment.

2. Although surgical treatment is the only method for external hemorrhoids, all cases of internal and most cases of mixed hemorrhoids can be permanently and safely obliterated with negative galvanism, without loss of time and without painful reaction.

3. Negative galvanism is an effective and painless method of obliteration, the technic of which is comparatively simple. Many patients today demand ambulant treatment which should be accorded by ethical physicians.

5. The negative galvanic treatment of hemorrhoids is not new, but its technic has been greatly developed on a scientific basis.

6. The superiority of negative galvanism for internal and mixed hemorrhoids is based on simplicity of technic, safety of procedure, and permanency of cure.

7. Equipment embraces a generator which provides a smooth galvanic current and needle electrodes capable of flexible manipulation. A needle guide-holder saves labor and eliminates the need of assistance.

8. No special preoperative or postoperative treatment is required for this procedure.

9. Comparison of negative galvanism with other methods of treatment proves it the method of choice because of physiological end results and absence of serious complications.

10. Advantages of negative galvanism far outweigh its minor inconveniences, chief of which is the time involved for each of a series of successful applications.

6205 Broadway.

* The author acknowledges his deep indebtedness to Dr. Disraeli Kobak for his advice, interest and help in supervision of this study.

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Reprinted from

"Archives of Physical Therapy, X-Ray, and Radium"

September, 1934

OBLITERATION OF HEMORRHOIDS WITH NEGATIVE GALVANISM *

WILBUR E. KEESEY, M.D.

CHICAGO

Hemorrhoids being affections most frequently seen by general practitioners, a method of treatment which in selected cases is simple, free from risks, and ideally curative, merits earnest consideration. It is generally conceded that surgical removal of any kind has not been satisfactory in many instances, to say nothing of the need of anesthesia, hospitalization, after care, and the like.⁽¹⁾ It is partly due to these undesired methods of treatment and partly to the failure of the medical profession to avail themselves of simpler and less disabling methods that patients have been driven to seek so-called bloodless cures by irregular practitioners.

Unfortunately the medical curricula have adhered to the purely surgical aspect of therapy and have ignored certain advances which are not lacking in scientific rationale. Drueck⁽²⁾ states that occasionally even well executed surgical procedures have resulted in such complications as hepatic abscess, rectal stricture, infections, and recurrences due to jeopardizing systemic conditions. There are, of course, certain forms of hemorrhoids for which surgery of some sort is absolutely indicated. But in the majority of instances I have found a method which is simple and yet highly effective. The patient's inalienable right to choose a less radical procedure is sufficient reason for inviting attention to the proper use of the negative galvanic current as an ideal method for obliteration of certain forms of hemorrhoids.

Rationale of the Negative Galvanic Method

Contrary to common belief, this method is not new,⁽³⁾ it being first employed in 1867. Nothing worthy of note was heard of it until 1892, when Baker presented a "Treatment of Hemorrhoids by Electricity." Baker's work inspired its adoption in certain localities, but many failures due to defective technic and unfamiliarity of its chemical action mitigated

against it. In the past decade successful technic has been developed. Chemical changes which take place in the tissues are now better understood. Although the exact colloidal reactions are yet to be discovered, research work leads me to believe that we are at the threshold of a thorough appreciation of the microchemical and physiological actions involved in the treatment. Sufficient experience has been gained to justify the classification of the obliteration of hemorrhoids by negative galvanism as a scientific method of treatment in the nature of a chemical reaction.

Haynes⁽⁴⁾ reports that in 1866, Althaus made microscopical observations of the changes in animal structures due to the electrolytic action of the negative galvanic needle. He found that the tissues were markedly contracted, and that there was neither inflammation, suppuration, nor sloughing. When the current was applied to the blood vessels they became changed into solid strings due to disintegration of the blood and deposition of lamellated fibrin. He concluded that no animal tissue can withstand the disintegrating effect of the negative pole; that the force and rapidity with which disintegration is brought about are directly proportional to the strength of current and to the softness and vascularity of the structures; and that the current could be safely and successfully applied to contract and disintegrate tissue, and obliterate blood vessels for surgical purposes. When applied to hemorrhoids, the negative pole produces first a hydrolytic decomposition and then a contraction of the tissues. Webb⁽⁵⁾ states that electrolytic destruction of the vasa vasorum is highly significant. Actual obliteration of the thrombosed mass is accomplished in one of two ways: It either absorbs as occurs in any simple contusion; or, if a large, thin walled hemorrhoid is treated, it ruptures, causing a discharge of the thrombosed elements into the rectum. Following this there is contraction of the underlying tissue with hemostasis, absence of pain, and rapid healing of the parts.

* Read at the Thirteenth Annual Session of the American Congress of Physical Therapy, Philadelphia, September 11, 1934.

* From the Physical Therapy Department, Cook County Hospital, Chicago.

Advantages of the Negative Galvanic Method

The advantages of this method are its simplicity, safety, and apparent permanency of cure. It is a procedure requiring neither anesthesia nor hospitalization. There are no unfavorable sequelae. In my own work I have never seen a severe complication in over 700 individual treatments. Actual hemorrhage has never been encountered, although patients commonly report the loss of a few drops of blood at stool following each galvanic application. To date there have been no cases of rectal stricture or metastatic abscess. Webb's experience with electrolysis justified his belief that there is no danger from embolism. The treatment presupposes special but simple technic.

Permanency of cure is due to complete obliteration of the entire vein from its point of origin to its most dependent portion. In surgical hemorrhoidectomy the actual site of origin of the hemorrhoid in the superior hemorrhoidal plexus is frequently too high to permit of surgical removal without an extensive operation with sacrifice of much normal tissue. If the terminal or dependent portion of the mass only is removed, the remaining segment near the plexus may easily become enlarged under pressure and cause recurrence.

Hemorrhoids may be classified as external, internal, and mixed or internoexternal. External hemorrhoids may be subclassified as thrombotic, skin tags, and varicosities. Internal hemorrhoids are subclassified as varicose, and capillary or nevoid piles. Internal varicose hemorrhoids are again subclassified into non-protruding and protruding. Mixed hemorrhoids possess the characteristics of both internal and external hemorrhoids.

As all forms of external hemorrhoids are covered with integument and richly endowed with sensory nerves, the negative galvanic current or any other method except surgery is not applicable. Their clinical significance does not usually necessitate special medical attention.

Internal and mixed hemorrhoids in one form or other make up 90 per cent of cases coming to treatment, because they are the most important clinically. It is in these types that negative galvanism is highly effective. True internal hemorrhoidal tissue being practically devoid of sensory nerves, obliteration

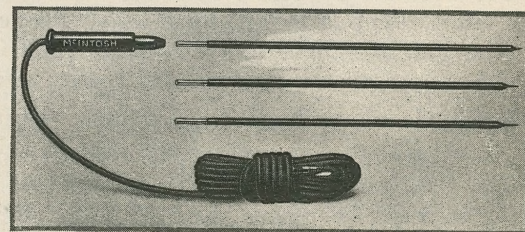
of these tumors with negative galvanism is a painless procedure.

Equipment

The principal appliances needed for this type of operation are:

1. A galvanic generator producing a perfectly smooth current.
2. A large, dispersive, indifferent electrode, 4x8 inches in size.
3. Large, medium, and small sized Brinkerhoff speculae.
4. A convenient operating table.
5. Specially constructed rectal needle electrodes with short, medium, and long tips.

The *active needle electrode* is a most important factor, because it must deliver the current to the interior of the hemorrhoid while preventing escape of hydrogen from the tissue, and allow clear visibility of the operative field. I devised in 1932, a set of electrodes so constructed as to prevent past defects in instrumentation. This set consists of a hard rubber handle with a six-foot cord, and three extra long, insulated, steel needles, with points one-eighth, one-fourth, and five-sixteenths inches in length. The insulated portion of each needle shaft is seven and three-fourths inches in length and only one-eighth inch in diameter, which permits ease of manipulation and affords clear vision of the operative field. As the exposure with a Brinkerhoff speculum is none too large, a needle shaft of the above dimensions is essential for unobstructed manipulation. The insulated portion is of hard rubber and is tapered at the base of the needle in a manner to prevent escape of hydrogen gas. A chuck in the needle handle steadies the needle securely, assuring perfect conductivity of the current.



The average case needs no other preoperative measure than evacuation of the bowels and a preparatory cleansing enema. A large, prolapsed, irreducible hemorrhoid may necessitate a preliminary divulsion of the sphincter.

In cases of mixed hemorrhoids with external thrombi, the clots should first be emptied. It hardly needs mention that any etiologic factors responsible for the development of hemorrhoids should receive proper attention.

Technic for Internal Non-Protruding Hemorrhoids

The patient is placed on the table on his left side in Sims' position. The dispersive electrode, having been thoroughly moistened, is connected to the positive pole and placed under the patient's left thigh. The needle in the insulated handle is connected to the negative pole. The speculum is gently inserted to its full length, well above Hilton's line, and the slide withdrawn until the uppermost hemorrhoid comes into view. Slight rotation of the speculum while the patient strains will expose the entire hemorrhoid. The needle electrode is now inserted into the tumor. As before stated, true hemorrhoidal tissue has no sensory nerves, which fact enables the painless insertion of the needle. Genuine hemorrhoid tissue is most often characterized by the brilliant red color of the submucous tissue appearing through a break or erosion in the mucous membrane, but if the mucous membrane is intact the tumor will have a dark violaceous appearance. The needle should be inserted wherever the bright red submucous tissue is observed. Normal mucous membrane is characterized by its pale, pink, translucent appearance and should never be touched with the electrode. The needle is inserted in the uppermost portion of the hemorrhoid, in the longitudinal axis of the vein, and at a very slight angle to the rectal canal. Insertion should be made firmly into the mass to prevent leakage of hydrogen, without, however, touching the opposite wall in order to avoid pain and possible sloughing of the muscularis or mucosa.

From the standpoint of pain and end results a successful treatment demands that the needle point be in the lumen of the vein. The patient is our best guide, for if he complains of burning pain the technic is improper. Anesthesia should be avoided in all cases, because it deprives us of this index. The current is now turned on very gradually, two to three minutes being required to bring the current up to 10 or 15 milliamperes, according to the tolerance of the patient. If in the opinion of the operator proper insertion has been made and there is burning pain, the needle point

should be shifted to another angle while in the tissue. Should pain persist following such a manipulation, the current should be shut off and the needle reinserted into a new place. It should always be inserted before the current is turned on, and upon termination of treatment the current should always be slowly turned off before the electrode is withdrawn. A violation of these rules will produce a sudden shock, which, of course, should be avoided. The maximum current tolerance is continued until a change of color occurs in the tissue. At first, light colored bubbles are seen under the mucosa which later changes into a dark red, and in some instances nearly black, color. Treatment is terminated at this point, the whole procedure lasting 10 to 12 minutes. The current is slowly turned off and the needle withdrawn.

If the tumor is large, one or two other insertions are made one-fourth to one-half inches away from the first and the process is repeated. However, in all punctures subsequent to the first, the current is continued for only five minutes, because discoloration appears much sooner. The evidence of successful treatment is complete discoloration of the entire hemorrhoidal mass, the number of insertions required for each tumor depending on its size. Not more than one hemorrhoid is treated at a seance to avoid nervousness or fatigue of the patient. Treatments are given every third day, the average case requiring about six treatments for complete obliteration of all hemorrhoids.

Transitory nervousness and excitement may be controlled by general conversation during treatment. Complaint of burning pain is significant, but other sensations are due to pressure and require no attention.

Technic for Internal Protruding Hemorrhoids

Internal protruding hemorrhoids are treated while prolapsed, wherever possible, without the aid of a speculum. If the hemorrhoid cannot be reduced, a divulsion of the sphincter should first be attempted. Easily reduced hemorrhoids often do not protrude at a seance and should be forced out. For this purpose an enema may be given and the patient instructed to strain while evacuating. If this fails, the speculum should be inserted, the slide withdrawn, and the hemorrhoid crowded into the groove. The speculum is then withdrawn and the mass everted. Only the one hemorrhoid selected for treatment is everted

and all others are replaced within the rectum to insure comfort. In this type of hemorrhoid a shorter needle in a 3-inch applicator is employed. The method of insertion, time of treatment, and current intensity are the same as in the preceding technic.

At termination of treatment the discolored mass is replaced within the rectum, no patient being allowed to leave the office without replacement of all protruding masses. Except for a peculiar feeling of fullness for about twelve hours following treatment, there is no painful reaction. If a thorough treatment has been given the individual tumor will retract well within the rectum and carry the loose, redundant folds of perianal integument with it. This dramatic result never fails to impress the patient who has suffered with protruding hemorrhoids for a long period. After all protruding hemorrhoids have been obliterated, completion of treatment is exactly the same as that for internal, non-protruding hemorrhoids. The speculum is inserted and the remaining hemorrhoids treated at their origin, as high in the rectum as possible at first, and at lower levels later.

Capillary hemorrhoids are rare and clinically unimportant as compared with internal venous hemorrhoids. Being situated in the rectal ampulla, they do not protrude and are diagnosed by speculum examination. Due to their histologic structure the sentinel symptom is bleeding. Although they frequently heal spontaneously, they are effectively treated where indicated by insertion of the negative galvanic needle directly into the mass, with the same technic as for internal non-protruding hemorrhoids, but with a lessened current intensity and time.

Mixed Hemorrhoids can usually be successfully obliterated by applying the negative galvanic current to the mucous portion and treating through the speculum with the technic given for internal, non-protruding hemorrhoids. However, I wish to emphasize that the negative galvanic needle can never be applied to any hemorrhoid clothed with integument and therefore the external portion of a mixed hemorrhoid cannot be so treated. But in most cases, if the internal portion of the mass is obliterated, sufficient contraction takes place to cause a definite retraction of the external portion within the rectum where it undergoes contraction and obliteration.

Postoperative Treatment

Following each treatment, a small quantity of nupercaine ointment, 1 per cent, is injected into the rectum. No other postoperative treatment is necessary, as the after effects are negligible. Bleeding, pain, and protrusion usually cease after the first treatment; all symptoms are promptly relieved. The hemorrhoid undergoes a rapid change, the mucosa assuming a normal condition in one week to ten days. If the hemorrhoid is then not completely obliterated, insufficient current has been used. In such a case a second treatment of shorter duration should be given. At no time does the patient have to be recumbent.

Progress and termination of a case is determined by the speculum. Tumors readily force their way through the window at beginning of treatment, but when terminated the slide may be withdrawn to the papillary line and the instrument rotated in a complete circle without the usual bulging appearing in the window.

Existing complications are best treated preoperatively. Fissures, ulcers, perirectal abscesses, or fistulae should be eradicated first. A markedly contracted sphincter is divulsed before any treatment is given, because it will benefit small internal hemorrhoids and hasten the actual obliteration of the treated tumors. Proctitis and colitis commonly associated with hemorrhoids should not be treated first if they are a secondary manifestation.

Comparison With Operative Methods

The following comparative advantages of negative galvanism are enumerated:

1. Negative galvanic treatment never causes more than a well tolerated discomfort to the patient. Postoperative defecation is not painful. Surgical removal produces postoperative pain, usually severe enough to demand narcotics. Bowel movements during the seven-day postoperative period often cause severe pain.
2. Anesthesia is not required with negative galvanism, in contrast with surgery.
3. Hemorrhage following negative galvanism never occurs, while surgical removal, as emphasized by Drueck⁽⁶⁾, not infrequently is followed by extensive postoperative hemorrhage, requiring heroic measures for control.
4. Infection following negative galvanism, if ever, takes place⁽³⁾. The method itself is self-sterilizing. I have never seen an infec-

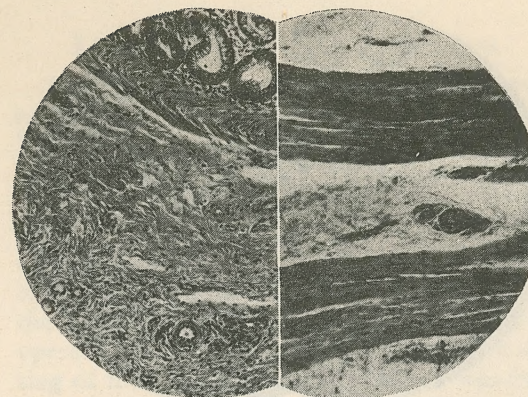


Fig. 1. Microphotograph (high magnification) of rectal tissue of dog taken 12 hours after treatment with negative galvanism at 15 ma. for 10 minutes. Note integrity of muscle fibers with complete destruction of connective tissue and vascular elements. Observe contrast with normal tissue section shown at left.

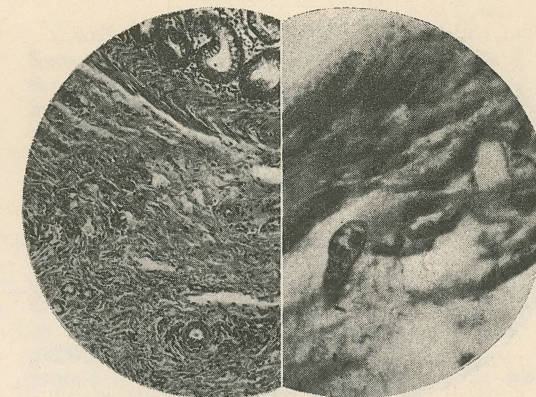


Fig. 2. Microphotograph (medium magnification) of rectal tissue of dog 12 hours after treatment with negative galvanism at 15 ma. for 10 minutes. Complete tissue disintegration is evidenced by absence of nuclei. Note thickening of thrombosed capillary wall and also of the intramuscular glands. The surface membrane presents a smooth appearance. Observe normal tissue section at left.

tion in a large number of cases treated both in private practice and at Cook County Hospital, Chicago. Infection following surgery is always possible and may become serious due to the venous relationship of the rectum to the portal system.

5. Sequelae and complications following negative galvanism have not been observed. Surgical removal frequently causes vesicospasm with retention of urine, stricture of the rectum with anal stenosis, fistulae, fissure, abscess, and incontinence of feces.

6. Mortality following negative galvanism has never been reported, while surgical fatalities from primary hemorrhage, fulminating infections, and bronchopneumonia, are matters of record.

7. Recurrence after negative galvanism must be very rare, not one having been observed in more than 100 cases. Webb⁽⁵⁾ found electrolysis of hemorrhoids to be the most permanent method. Permanency of cure is due to treatment of hemorrhoids at their origin. Miller⁽⁷⁾ states that a firm and normal physiological support for the venous plexus is formed by contraction and adhesion of the mucous membrane. Redundant mucosa becomes obliterated although normal mucous membrane retains its original elasticity and tonicity without scar tissue formation. With surgical methods, difficult accessibility to the hemorrhoidal origin in the plexus tends toward incomplete removal, and, even if the tumor is completely removed, there is usually a sacrifice of much normal tissue causing excessive scar formation and a potential stricture.

8. There is no loss of time to the patient with negative galvanism, it being an ambulant office procedure — a self-evident economic advantage. The same applies to avoidance of expense incident to hospitalization for surgery.

9. With negative galvanism there is no need for restriction of diet, before, during, or after treatment, usually required with surgical procedures.

Comparison With Electrosurgery

Electrocoagulation is an operative procedure because of its destructive principle and need for anesthesia⁽⁸⁾. It has never been widely in vogue. Ronneaux⁽⁹⁾ states that when local anesthesia is employed there is danger of edema due to the action of the heat production on the excessive fluid of the tissues which causes undesirable postoperative pain and constant danger of hemorrhage. This procedure must be considered comparable to orthodox surgical removal with all its disadvantages. Although danger of metastatic abscess may be lessened as compared with classic surgery, this advantage is offset by the possibility of edema, painful postoperative reaction, sloughing, and hemorrhage. As compared with negative galvanism we must conclude therefore that electrocoagulation possesses most of the disadvantages of surgical hemorrhoidectomy.

Comparison With Injection Methods

The injection method presents such conflicting ideas regarding technic, solutions, dosage, and end results, that there is a lack of standardization. It therefore becomes difficult of comparison with either negative galvanism or operative methods. The rationale of the in-

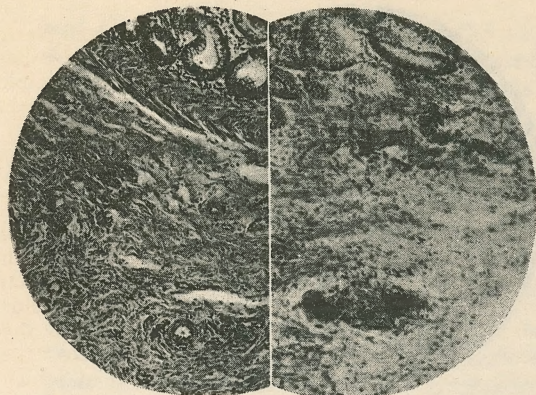


Fig. 3. Microphotograph (medium magnification) of rectal tissue of dog taken 12 hours after injection of $\frac{1}{2}$ c.c. of 5 per cent phenolized cells. Observe normal tissue section at left.

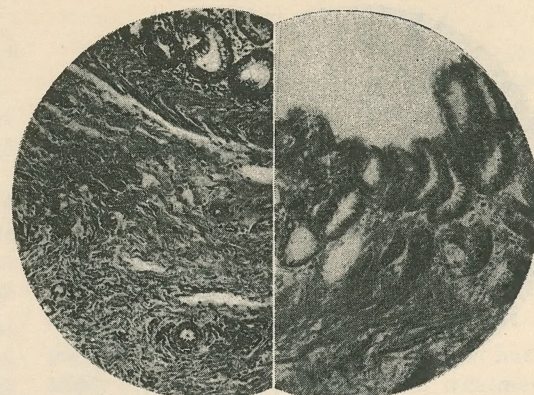


Fig. 4. Microphotograph (medium magnification) of rectal tissue of dog taken 12 hours after injection of $\frac{1}{2}$ c.c. of 5 per cent phenolized oil. Note marked sclerotic changes of muscularis mucosa, contraction of goblet cells and marked contraction of surface membrane. Observe normal tissue section shown at left.

jection method is based on an inflammatory sclerosing reaction. Anderson⁽¹⁰⁾ observed microscopically that all changes following injection of 10 per cent phenol represented an effort of the tissues to repair an injury. By virtue of this action there is contraction of normal tissue and scar formation. Although hemorrhoids may be obliterated, this is done at the expense of a contracted, and distorted mucous membrane, which has lost its elasticity, and presents a hardened "washboard" appearance. If insufficient solution is injected to produce this sclerosing effect, hemorrhoids fail to total obliteration. If not completely obliterated, they will return as they do following incomplete surgical removal. Thus, recurrence is not unusual and I have frequently treated cases successfully with negative galvanism which had been injected one or more times futilely. The negative galvanic current does not produce such an inflammatory sclerosing effect because the chemical action is on the liquid content of the mass instead of the tumor wall, and its one great advantage over all other methods is the resultant normal resiliency of the mucous membrane after obliteration.

Sequelae and complications following injection treatment are of frequent record. Spencer⁽¹¹⁾ reported a fatality and presented sufficient necropsy findings to justify his statement that injection of sclerosing fluids markedly reduces tissue resistance. Hawkins⁽¹²⁾ demonstrated the danger of infection and abscess formation from phenol injection and found that it frequently causes fistula. Kilbourne⁽¹³⁾ in 1934, made an exhaustive international survey of cases treated with operative and injection methods. Reports were obtained from

293 proctologists. Out of 26,262 cases treated with the injection method the following unfavorable results were reported: Severe sloughing, 285; serious hemorrhage, 73; severe stricture, 6. At the termination of a three-year observation period there were 966 recurrences in 9,691 cases injected. These results hardly differ from those reported by Andrews⁽¹⁴⁾ fifty years ago when the injection method was in its infancy. By comparison we find:

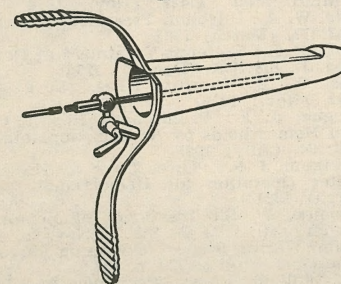
TABLE 1
Comparison of Past and Present Results of Hemorrhoid Injection

	ANDREWS	KILBOURNE
Severe sloughing	50 years ago, 1.06%	Today, 1.09%
Severe hemorrhage	50 years ago, .3%	Today, .27%
Anal stricture	50 years ago, .06%	Today, .02%
Recurrence	50 years ago, .5%	Today, 10.0%

That the ideal solution for hemorrhoid injection has not been found is attested by the fact that a well known proctologist who had used negative galvanism with highly successful results, is now attempting to produce hydrogen gas in the hemorrhoid by the injection of some chemical. It is obvious that he values the end results of negative galvanism above that of the injection method, but wishes to attain such results with the shorter technic of injection. In this endeavor I predict that he is doomed to failure, for I am certain that negative galvanism can never have a chemical substitute. Surely the splendid end results of negative galvanism will more than repay the operator for the few extra minutes of work. Dunne⁽¹⁵⁾ believes that treatment of the future for many rectal conditions will be some form of electrotherapy.

Limitations of Negative Galvanism

That external hemorrhoids cannot be treated with galvanism has already been stated. The comparative length of time required for each application has been the subject of objectionable comment. Complaint also has been made that due to the required time and exactness of technic, the procedure was too tedious for the operator steadily to support the needle. Another difficulty experienced by operators was their inability to change the setting of the generator while one hand was confined to holding the speculum and the other the needle, requiring, therefore, the services of an assistant. I have overcome both of these features by devising a simple accessory, the "Needle Guide-Holder." It consists of a small knife-blade joint at the end of a one-half inch shank. This shank is inserted into a small split stud, fastened to the speculum by drilling a hole in the lower handle. Above the knife-blade joint and attached to it is a small sleeve with a ball-tension joint the calibre of which is large enough to accommodate the needle. In the center of the sleeve is an automatic spring which exerts a constant pressure on the insulated portion of the needle and prevents its retraction following insertion. At the right is a small screw lever. When this is loose the needle is capable of motion in any direction, but when tightened it holds the needle securely in place. It is then only necessary to hold the handle of the speculum with one hand, allowing freedom for the other to manipulate the generator. This device is removable and may be attached to any standard size Brinkerhoff speculum to which the necessary stud has been fastened. I have found it of great advantage in eliminating all tediousness and fatigue.



Report of Cases

A brief report of six typical cases is presented as illustration of what may be accomplished:

CASE 1.—Mr. R. R., aged 40, railway mail clerk. Symptoms: Bleeding, protrusion, pain, constipation. Protrusion constantly present; reducible but appearing again almost immediately. Pain of sufficient severity to cause absence from duty. Has taken epsom salts every morning for past two years. Was advised operation imperative.

Examination: A large internal protruding hemorrhoid is seen externally, deep red in color and about the size of a hazel nut. It is covered with mucous membrane and is reducible. Speculum examination reveals large internal hemorrhoids on all walls. When slide is withdrawn to the papillary line, the tumors protrude into the groove of the instrument at any point at which it is placed.

Diagnosis: Severe internal protruding hemorrhoids. Treatment: Eight applications of negative galvanism were given at three-day intervals.

Results: Bleeding stopped entirely after the first and protrusion ceased after the second treatment. Postoperative observation at three, six, and twelve months showed the hemorrhoids to have entirely disappeared as have all the subjective symptoms.

CASE 2.—Mrs. M. H., aged 48, housewife. Symptoms: Constipation, backache, rectal pain, and occasional slight bleeding. Backache of three years duration. Has not been relieved by previous treatments.

Examination: Large internal hemorrhoids observed through the speculum. Externally no protrusion but a suggestion of bulging in perianal skin opposite both lateral walls.

Diagnosis: Internal non-protruding hemorrhoids.

Treatment: Six applications of negative galvanism at four-day intervals. Mineral oil nightly.

Results: Backache and rectal pain markedly relieved after the first treatment which gradually improved and disappeared after the fourth application. Bowel movements regular after the fifth treatment.

Comment: This case had been treated twice previously during a five-year period with the injection method. No recurrence either for the tumors or symptoms 22 months after completion of course.

CASE 3.—Mr. H. G., aged 53, newspaper editor. Symptoms: Slight bleeding after defecation. Occasional dull pain. Severe itching almost constant.

Examination: External, negative. Internally, moderately sized hemorrhoids.

Diagnosis: Pruritus ani, secondary to internal, non-protruding hemorrhoids.

Treatment: Six negative galvanic applications.

Results: Bleeding and pain ceased entirely after the second treatment. Itching improved after the first and disappeared after the third treatment.

Comment: This case had been operated twice and treated once with diathermy during a seven-year period, with incomplete relief.

CASE 4.—Mrs. N. E., aged 34, housewife. Symptoms: Constant pain, worse after defecation. Multiple peri-rectal abscesses for the past 3 years. Constant rectal discharge and occasional bleeding.

Examination: Connective tissue piles externally. No protrusion. Bilateral fistula-in-ano. Probe inserted to the depth of about one inch, but no internal opening was found. Multiple internal hemorrhoids visible through the speculum.

Diagnosis: Fistula-in-ano, internal, non-protruding hemorrhoids.

Treatment: Under general anesthesia, division of the sphincter and dissection of the fistulous tracts. This was followed in one month by four negative galvanic applications.

Result: Cure.

CASE 5.—Mr. R. J., aged 72, watchman. Symptoms: Protrusion with slight bleeding. Condition present for past 12 years, but bleeding has become less severe during past three years.

Examination: Large internal protruding hemorrhoids continuous with external varicose hemorrhoids.

Diagnosis: Mixed hemorrhoids, severe.

Treatment: Seven negative galvanic applications at four-day intervals.

Result: Protrusion of mucous portion disappeared after second treatment. External varicose portion markedly contracted after the fifth and disappeared after the seventh treatment. No bleeding after the second treatment.

Conclusions *

1. Treatment of hemorrhoids by negative galvanism offers a large field for qualified general practitioners. Ninety per cent of all hemorrhoids are amenable to such treatment.

2. Although surgical treatment is the only method for external hemorrhoids, all cases of internal and most cases of mixed hemorrhoids can be permanently and safely obliterated with negative galvanism, without loss of time and without painful reaction.

3. Negative galvanism is an effective and painless method of obliteration, the technic of which is comparatively simple. Many patients today demand ambulant treatment which should be accorded by ethical physicians.

5. The negative galvanic treatment of hemorrhoids is not new, but its technic has been greatly developed on a scientific basis.

6. The superiority of negative galvanism for internal and mixed hemorrhoids is based on simplicity of technic, safety of procedure, and permanency of cure.

7. Equipment embraces a generator which provides a smooth galvanic current and needle electrodes capable of flexible manipulation. A needle guide-holder saves labor and eliminates the need of assistance.

8. No special preoperative or postoperative treatment is required for this procedure.

9. Comparison of negative galvanism with other methods of treatment proves it the method of choice because of physiological end results and absence of serious complications.

10. Advantages of negative galvanism far outweigh its minor inconveniences, chief of which is the time involved for each of a series of successful applications.

6205 Broadway.

* The author acknowledges his deep indebtedness to Dr. Disraeli Kobak for his advice, interest and help in supervision of this study.

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OBLITERATION OF HEMORRHOIDS WITH NEGATIVE GALVANISM *

WILBUR E. KEESEY, M.D.

CHICAGO

Hemorrhoids being affections most frequently seen by general practitioners, a method of treatment which in selected cases is simple, free from risks, and ideally curative, merits earnest consideration. It is generally conceded that surgical removal of any kind has not been satisfactory in many instances, to say nothing of the need of anesthesia, hospitalization, after care, and the like.⁽¹⁾ It is partly due to these undesired methods of treatment and partly to the failure of the medical profession to avail themselves of simpler and less disabling methods that patients have been driven to seek so-called bloodless cures by irregular practitioners.

Unfortunately the medical curricula have adhered to the purely surgical aspect of therapy and have ignored certain advances which are not lacking in scientific rationale. Drueck⁽²⁾ states that occasionally even well executed surgical procedures have resulted in such complications as hepatic abscess, rectal stricture, infections, and recurrences due to jeopardizing systemic conditions. There are, of course, certain forms of hemorrhoids for which surgery of some sort is absolutely indicated. But in the majority of instances I have found a method which is simple and yet highly effective. The patient's inalienable right to choose a less radical procedure is sufficient reason for inviting attention to the proper use of the negative galvanic current as an ideal method for obliteration of certain forms of hemorrhoids.

Rationale of the Negative Galvanic Method

Contrary to common belief, this method is not new,⁽³⁾ it being first employed in 1867. Nothing worthy of note was heard of it until 1892, when Baker presented a "Treatment of Hemorrhoids by Electricity." Baker's work inspired its adoption in certain localities, but many failures due to defective technic and unfamiliarity of its chemical action mitigated

against it. In the past decade successful technic has been developed. Chemical changes which take place in the tissues are now better understood. Although the exact colloidal reactions are yet to be discovered, research work leads me to believe that we are at the threshold of a thorough appreciation of the microchemical and physiological actions involved in the treatment. Sufficient experience has been gained to justify the classification of the obliteration of hemorrhoids by negative galvanism as a scientific method of treatment in the nature of a chemical reaction.

Haynes⁽⁴⁾ reports that in 1866, Althaus made microscopical observations of the changes in animal structures due to the electrolytic action of the negative galvanic needle. He found that the tissues were markedly contracted, and that there was neither inflammation, suppuration, nor sloughing. When the current was applied to the blood vessels they became changed into solid strings due to disintegration of the blood and deposition of lamellated fibrin. He concluded that no animal tissue can withstand the disintegrating effect of the negative pole; that the force and rapidity with which disintegration is brought about are directly proportional to the strength of current and to the softness and vascularity of the structures; and that the current could be safely and successfully applied to contract and disintegrate tissue, and obliterate blood vessels for surgical purposes. When applied to hemorrhoids, the negative pole produces first a hydrolytic decomposition and then a contraction of the tissues. Webb⁽⁵⁾ states that electrolytic destruction of the vasa vasorum is highly significant. Actual obliteration of the thrombosed mass is accomplished in one of two ways: It either absorbs as occurs in any simple contusion; or, if a large, thin walled hemorrhoid is treated, it ruptures, causing a discharge of the thrombosed elements into the rectum. Following this there is contraction of the underlying tissue with hemostasis, absence of pain, and rapid healing of the parts.

* Read at the Thirteenth Annual Session of the American Congress of Physical Therapy, Philadelphia, September 11, 1934.

* From the Physical Therapy Department, Cook County Hospital, Chicago.